

**BIOCALCIFICATION IN THE INDO-PACIFIC CORALLINE DEMOSPONGE *ASTROSCLERA WILLEYANA* LISTER - THE ROLE OF BASOPINACODERM.** *Memoirs of the Queensland Museum* 44: 666. 1999;- The aragonitic calcareous basal skeleton of *Astrosclera* is composed of 20-60µm-sized aragonitic spherulites, produced by a combination of three processes. First, the spherulites are formed in large vesicle cells (LVC's) inside large vesicles in the ectosome. In a second process, after release from LVC's, basopinacocytes transport the spherulites to the tips of the skeletal pillars, where they fuse together by epitaxial growth; and in a third process, during upward growth, the soft tissue is slowly rejected from the lowermost-parts of the skeletal cavities and the remaining spaces are subsequently filled by epitaxially-growing aragonite fibers. In the second and third process, basopinacocytes produce either the insoluble intracrystalline organic matrix, which does not consist of collagen, as well as the soluble intracrystalline matrix, which consists of highly acidic Ca<sup>2+</sup>-binding mucus substances. Basopinacocytes control speed and direction of epitaxial growth in both of the latter two

biocalcification processes. It is hypothesized that *Astrosclera* is able to control the rate of calcification by the regulation of its bacterial population. The mean growth rate of *Astrosclera* was measured at 230µm per year. A detailed description of soft tissue ultrastructure and its cellular composition has recently been published by Wörheide (1998). □ *Porifera, Astrosclera, skeletal development, calcification regulation, ultrastructure.*

**Literature cited.**

WÖRHEIDE, G. 1998. The reef cave dwelling ultraconservative coralline demosponge *Astrosclera willeyana* Lister from the Indo-Pacific - Micromorphology, Ultrastructure, Biocalcification, Taxonomy, Biogeography, Phylogeny. *Isotope Record. Facies* 38: 1-88.

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